

REMARKS

The Office Action mailed December 16, 2004 has been received and carefully noted.

The following remarks are submitted as a full and complete response thereto. Claims 11-13 and 15-17 are pending in the present application and are respectfully submitted for reconsideration.

No extension of time is believed to be required based upon the filing of this Response prior to the deadline of the three-month statutory period (i.e., March 16, 2005). Authorization is granted to charge counsel's Deposit Account No. 01-2300, referencing **Attorney Docket No. 101201-00009**, for any additional fees necessary for entry of this Response.

Claims 11-13 and 15-17 were finally rejected under 35 U.S.C. § 102(e) as being anticipated by the Akihiro et al. reference (JP 09-284200). Dependent claims 11-13 and 16 depend from independent claim 15. The rejections are respectfully traversed and reconsideration is requested.

Independent claim 15 recites a wireless base station that transmits a control signal to a non-specific mobile station by forming an omnidirectional antenna pattern and transmits a control signal to a specific mobile station by forming an array antenna pattern, the wireless base station comprising a judging unit operable to, when the control signal is to be transmitted to the specific mobile station, judge if at least one of the following is satisfied: (a) a difference between received reference signals in an immediately preceding reception from a mobile station is equal to or larger than a threshold value, and (b) a time lapse between the immediately preceding reception and the transmission of the control signal exceeds a predetermined length; and a controlling unit operable to, when the judging unit judges in the affirmative, stop the wireless base station from forming the array antenna pattern and force the wireless base station to

transmit the control signal by forming an omnidirectional antenna pattern. Independent claim 17 recites a controlling method of the same. It is respectfully submitted that the Akihiro et al. reference does not disclose or suggest the apparatus and method claimed in the present invention.

The present invention provides an arrangement wherein transmission is performed, in principle, with an array antenna pattern in normal situations in order to reduce interference between control signals of a plurality of base stations, although transmission is to be performed with an omnidirectional antenna pattern that does not require spatial positions of terminals to be specified, in the case where the reception level is low or the time lapse between a reception and a transmission is longer than a predetermined length because it is considered that there has been a change in the radio wave transfer environment. In such an arrangement, the judging unit judges whether the communication quality is bad (i.e., the difference between received reference signals is equal to or larger than a threshold value) and whether the time lapse between the reception and the transmission is longer than the predetermined length. When the judging unit judges that at least one of these conditions is satisfied, the control unit regards the situation that there has been a big change in the radio wave transfer environment and switches the pattern to an omnidirectional antenna pattern which does not require the spatial position of the mobile station to be specified, in order to ensure that the control signal is transmitted to the mobile station.

While both the present invention and the Akihiro et al. reference are directed to achieve efficient use of frequencies by selectively using one of an array antenna pattern and an omnidirectional antenna pattern depending on the situations, the Akihiro et al. reference views the main problem as "use with a narrow beam will result in an increase of spatial correlation and a reduction in the effect of spatial diversity" (paras. [0009] [0010]). In order to solve this problem, if a high enough level of desired radio wave is available (i.e., the signal level of a

terminal is equal to or larger than a threshold value [0038], and the passing speed is equal to or lower than a threshold value [0043]), an omnidirectional antenna pattern is to be assigned. In other words, when the conditions are good, for example, when a terminal is positioned nearby or when a terminal is not moving around, transmission needs to be performed with an omnidirectional antenna pattern in order to maintain the reception characteristics with the diversity of the terminal. This switching between the array antenna pattern and the omnidirectional antenna pattern disclosed by the Akihiro et al. reference is totally opposite of the arrangement achieved by the controlling unit of the present invention. For example, according to the present invention, when the communication quality is bad, an omnidirectional antenna pattern is selected, while according to the Akihiro et al. reference, when the communication quality is goods, an omnidirectional antenna pattern is selected.

The object of the Akihiro et al. reference is to allow the diversity function of a terminal to work effectively [0010]. In order to achieve this object, when the level of a transmission signal at a terminal is equal to or larger than a threshold value (in other words, if the reception level is good), an omnidirectional transmission with which multi-path occurs in abundance is selected so that the reception level can be further improved by the diversity effect. To summarize, the Akihiro et al. reference discloses an arrangement wherein an omnidirectional antenna pattern is selected to further improve the reception level in the case where a certain level of reception level is already ensured (i.e., the transmission signal level is no smaller than the threshold value).

In contrast, the present invention selects an omnidirectional antenna pattern that does not require the position of a terminal to be specified in the case where (i) the difference of a signal received from a terminal from a reference signal is equal to or larger than a threshold value or (ii) the time lapse since an immediately preceding reception is longer than a predetermined length (in

other words, in the case where the reception level is bad or where the position cannot be conjectured), in order to make sure that a signal can reach the terminal without failure. To summarize, if there is a possibility that the signal may not reach the terminal, our invention selects an omnidirectional pattern in order to ensure that the signal can be transmitted.

Hence, while the Akihiro et al. reference and the present invention are similar in that an omnidirectional antenna pattern is used, they are largely different as to what situation an omnidirectional pattern is to be applied. For example, the Akihiro et al. reference applies the omnidirectional pattern for further improvement of reception level, while the present invention applies the omnidirectional pattern for assurance of signal transmission. They therefore present totally different features, for example, criteria to be used in the judgment of when to use the omnidirectional antenna pattern.

Based upon the forgoing, Applicants respectfully submit that each and every element recited within independent claims 15 and 17 is neither disclosed nor suggested by the Akihiro et al. reference, and therefore patentable and in condition for allowance. Reconsideration is requested.


It is further submitted that dependent claims 11-13 and 16 are also patentable and in condition for allowance due to their dependency upon independent claim 15, since the dependent claims differ in scope from the parent claim. Dependent claims 11-13 and 16 depend from independent claim 15, and thus are further limited to additional features of the invention. Therefore, it is respectfully submitted that the dependent claims are patentable over the Akihito et al. reference for at least the reasons set forth above with respect to independent claim 15. Reconsideration is requested.

Entry of this Response after final rejection is therefore submitted as proper in that it places the application in condition for allowance. Particularly, the present Response is submitted as not raising new issues or requiring further consideration or searching. Undersigned counsel would accordingly appreciate the Examiner telephoning counsel prior to the expiration of the six-month statutory period (i.e., June 16, 2005) to indicate the disposition of this Response.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact the Applicant's undersigned counsel at the telephone number, indicated below, to arrange for an interview to expedite the disposition of this application.

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Respectfully submitted,


Marydee Jenkins
Registration No. 37,645
Attorney for Applicant

Customer No. 004372
ARENT FOX, PLLC
1675 Broadway
New York, New York 10019
Tel: (212) 484-3928
Fax: (212) 484-3990

MLJ/my